

IN THE CLAIMS:

Please cancel claims 1-31 and accept new claims 32-56 as follows:

1-31. (canceled)

32. (new) A method for forming a microstructure, comprising:

depositing a seed material on a substrate;

growing a nanotube from the seed material;

depositing microstructure material on the substrate to embed the nanotube in the microstructure material; and

detaching the substrate to release the microstructure.

33. (new) The method as recited in claim 32, further comprising shaping the microstructure material prior to release of the microstructure.

34. (new) The method as recited in claim 32, wherein the microstructure material comprises at least one of a polymer, a dielectric material, a metal, and polysilicon.

35. (new) The method as recited in claim 32, wherein the substrate is formed from one of silicon, glass, quartz, ceramics, and plastic.

36. (new) The method as recited in claim 32, wherein the seed material comprises alternating layers of a first precursor material and a second precursor material.

37. (new) The method as recited in claim 36, wherein the first precursor material comprises a fullerene material, and the second precursor material comprises field sensitive material.

38. (new) The method as recited in claim 37, wherein the fullerene material comprises one of Carbon 60 and Carbon 82, and the field sensitive material comprises at least one of Ni, Co, Fe and Mo.

39. (new) The method as recited in claim 38, wherein the fullerene material comprises Carbon 60, and the field sensitive material comprises Ni.

40. (new) The method as recited in claim 32, wherein growing of the nanotube comprises:

heating the substrate in vacuum conditions; and
applying a field to the substrate.

41. (new) The method as recited in claim 40, wherein the vacuum conditions comprise oxygen pressure greater than 10^{-5} mbar.

42. (new) The method as recited in claim 40, wherein heating comprises elevating the temperature of the substrate to between about 900°C and about 1000°C.

43. (new) The method as recited in claim 40, wherein the applied field comprises a magnetic field.

44. (new) The method as recited in claim 43, wherein the magnetic field is applied orthogonally to a surface of the substrate.

45. (new) The method as recited in claim 44, wherein the magnetic field is greater than or equal to about 50 Gauss.

46. (new) The method as recited in claim 40, wherein the applied field comprises an electric field.

47. (new) The method as recited in claim 45, wherein the electric field is applied orthogonally to a surface of the substrate.

48. (new) The method as recited in claim 32, wherein detaching comprises:
depositing a sacrificial layer on a surface of the substrate prior to deposition of the microstructure material; and

immersing the sacrificial layer in an electrolyte after deposition of the microstructure material.

49. (new) The method as recited in claim 48, wherein the sacrificial layer comprises an anode sub-layer and a cathode sub-layer.

50. (new) The method as recited in claim 49, wherein the anode sub-layer comprises one of Al, Zn, Cr, Fe, and Co, and the cathode sub-layer comprises a noble metal.

51. (new) The method as recited in claim 50, wherein the cathode sub-layer comprises one of Au, Pd, Pt, Ag, and Cu.

52. (new) The method as recited in claim 32, wherein depositing of the seed material comprises:

depositing a photoresist layer on the substrate;

forming an aperture in the photoresist layer;

masking the substrate with the photoresist layer to locate the seed material at a site on the substrate defined by the aperture; and

removing the photoresist layer to remove surplus seed material.

53. (new) The method as recited in claim 52, wherein forming of the aperture comprises under-etching the photoresist layer to produce a cavity in the photoresist layer.

54. (new) The method as recited in claim 32, further comprising forming a tip image in the substrate to produce a mold for receiving the microstructure material.

55. (new) The method as recited in claim 54, wherein forming of the tip image comprises:

depositing a photoresist layer on the substrate;

forming an aperture in the photoresist layer; and

under etching the substrate beneath the photoresist layer to create the tip image.

56. (new) The method as recited in claim 55, wherein depositing of the seed material comprises:

masking the substrate with the photoresist layer to locate the seed material in the apex of the tip image; and

removing the photoresist layer to remove surplus seed material.